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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,809	06/20/2003	Keith C. Hong	183-01	9261
27569	7590	12/04/2006	EXAMINER	
PAUL AND PAUL 2000 MARKET STREET SUITE 2900 PHILADELPHIA, PA 19103			TSOY, ELENA	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/600,809

Applicant(s)

HONG ET AL.

Examiner

Elena Tsoy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4,5,7-14 and 19-50 is/are pending in the application.
- 4a) Of the above claim(s) 19-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4,5,7-14 and 39-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Response to Amendment

Amendment filed on July 13, 2006 has been entered. New claims 46-50 have been added. Claims 4, 5, 7-14, and 19-50 are pending in the application. Claims 19-38 are withdrawn from consideration as directed to a non-elected invention.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 40, 9-12, and 44-45 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 40 and 44 recite limitation “at least 800⁰C”, i.e. to a temperature of 100,000 ⁰C or greater so that base particles would melt, and still produce porous granules?

3. Claims 40, 9-12, and 44-45 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for firing temperature in the range of 800-1200⁰C (See specification, page 6, lines 9-11), does not reasonably provide enablement for “at least 800⁰C”. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Rejection of claims 4, 5, 7, 8, 13, 14 and 39-43 under 35 U.S.C. 103(a) as being unpatentable over Balcar et al (US 5022897) in view of Joedicke/Skadulis/McMahon has been withdrawn since the Examiner agrees that particles of Balcar et al are not porous.

6. Rejection of claims 9-12, 44-45 under 35 U.S.C. 103(a) as being unpatentable over Balcar et al in view of Joedicke/Skadulis, further in view of Ryan et al (US 6306795) has been withdrawn since the Examiner agrees that particles of Balcar et al are not porous.

7. Claims 4-5, 7-8, 13, 14, 39, and 40-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joedicke/Skadulis/McMahon in view of Ine et al, further in view of Balcar et al (US 5022897).

Joedicke/Skadulis/McMahon are applied here for the same reasons as set forth in paragraph 6 of the Office Action mailed on 8/10/2005.

Each of Joedicke, Skadulis and McMahon teaches that the base particles are obtained by crushing and screening mineral aggregates (See Joedicke, column 2, lines 46-47; Skadulis, column 1, lines 61-62; McMahon, column 3, lines 3-4). However, Joedicke/Skadulis/McMahon fails to teach that a stone dust produced after crushing and screening is reused by granulating a mixture containing the stone dust and a binder and isolubilizing the binder (Claim 39); the mixture is formed into base particles by a forming process selected from press molding, cast molding,

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injection molding, extrusion, spray granulation, gel casting, pelletizing, compaction and agglomeration (Claim 4, 15).

Ine et al teach that a stone fine powder after crushing and screening can be recycled to produce granules of desired grain size by mixing the stone powder with a lime stabilizer (a binder) and granulating the mixture by compaction and agglomeration (See P 8, 12-18 of the machine translation) (See Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have recycled a stone fine powder produced after crushing and screening in Joedicke/Skadulis/McMahon for preparing granules of desirable grain size from by mixing it with a binder and granulating the mixture by compaction and agglomeration, as taught by Ine et al.

Ine et al fails to teach that aluminosilicate containing binder is used as a binder and the binder is isolubilized (Claim 39) by firing the granulated mineral dust in a kiln at a temperature of at least 800°C (Claims 40, 44).

Balcar et al teach that a sodium silicate (claimed binder) (See column 7, lines 23-27) or a **similar** substance (claimed binder) (See column 5, lines 51-52) in a *liquid* form (See column 6, lines 4-7; column 8, lines 24-26) in an amount of 10 wt % (See column 7, lines 23-24) can be used as a binder for granulating a glass dust (See column 8, line 26) for the use in roofing granules (See column 6, line 16). The dust is mixed with the binder on a roller mill (claimed compaction and agglomeration) followed by heating the granulated mixture to 1200 °C to achieve fusion (See column 7, lines 33-36). Since Balcar et al teach that a sodium silicate or a *similar* substance can be used a binder (See column 5, lines 51-52), obviously a combination of a sodium silicate **and** a *similar* substance useful for the same purpose can be used a binder. Balcar et al fail to teach that the **similar** substance is aluminosilicate. However, Joedicke/Skadulis/McMahon teaches that

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kaolin (aluminosilicate) can be used together with sodium silicate as a binder to bind to mineral granules, and the binder is insolubilized by firing to form hard roofing granules.

It is held that the selection of a known material based on its *suitability* for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used sodium silicate together with kaolin (aluminosilicate) as a binder for granulating a mineral dust in *Joedicke/Skadulis/McMahon* in view of *Ine et al* and insolubilized the granulated mixture by firing since *Balcar et al* teach that sodium silicate or a substance **similar** to sodium silicate can be used as a binder for granulating glass dust for roofing granules and *Joedicke/Skadulis/McMahon* teaches that sodium silicate together with kaolin (aluminosilicate) can be used as binder in roofing granules that can be insolubilized by firing.

It is held that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. In *re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values of the relevant temperature parameters for insolubilizing the binder (including those of claimed invention) in cited prior art through routine experimentation in the absence of showing of criticality.

It is the Examiner's position that kiln is conventionally used for heating to temperatures of 1200 °C. It is also the Examiner's position that the prepared roofing granules have porosity within claimed range because they are prepared by a process substantially identical to that of claimed invention.

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8. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joedicke/Skadulis/McMahon in view of Ine et al, further in view of Balcar et al, and further in view of Ryan et al (US 6306795).

Joedicke/Skadulis/McMahon in view of Ine et al, further in view of Balcar et al are applied here for the same reasons as above. Joedicke/Skadulis/McMahon in view of Ine et al, further in view of Balcar et al fails to teach that an algacide-forming compound is dissolved in a fluid to form a solution, the solution being drawn into the pores in the base particles by capillary action to form solution-laden particles, the solution-laden particles being subsequently treated to convert the algacide-forming compound to an inorganic algacide (Claim 9, 11, 12, 44); the algacide-forming compound is a soluble copper salt (Claim 10).

Ryan et al teach that cuprous oxide can be incorporated into a porous carrier material such as silica/alumina (See column 10, lines 27-28) by impregnating the porous carrier material with an aqueous solution of copper salts such as copper nitrate using e.g. well known the pore-volume impregnation (PVI) method (See column 11, lines 4-7, 22-42, 50-67), air drying and calcining the impregnated porous carrier material at 200 °C-540 °C to convert the copper salt to cupric oxide, cuprous oxide, or a mixture of the two (See column 12, lines 1-22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have added copper salts such as copper nitrate in an aqueous coating composition of cited prior art instead of Cu₂O (claimed slurry) before firing at 700 °F (371 °C) with the expectation of providing the desired intimate mixture of copper oxides with the porous carrier material since Ryan et al teach that cuprous oxide can be incorporated into a porous carrier material such as silica/alumina by impregnating the porous carrier material with an aqueous solution of copper salts such as copper nitrate using e.g. well known the pore-volume impregnation (PVI) method, air

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drying and calcining the impregnated porous carrier material at 200 °C-540 °C to convert the copper salt to cupric oxide, cuprous oxide, or a mixture of the two.

9. Claims 46-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joedicke/Skadulis/McMahon in view of Ine et al, further in view of Ryan et al, and further in view of Iwata et al (US 4735975).

Joedicke/Skadulis/McMahon in view of Ine et al in view of Ryan et al are applied here for the same reasons as above. Obviously, the amount of algicide deposited in roofing granules of pelletized stone dust by a method of Ryan et al would depend on porosity of the granules, i.e. an amount of algicide deposited in roofing granules of pelletized stone dust can be controlled by controlling porosity of pelletized stone dust.

However, cited prior art does not teach that porosity can be controlled by selection of the shape of the stone dust (Claims 46, 48) or by selection of the particle size distribution (Claims 47, 49) or by adjusting the ratio of stone dust and aluminosilicate (Claim 50).

Iwata et al teach that distribution and porosity of granulated powder material (See column 2, lines 43-43) may be controlled by particle size distribution of the granular material, shape of the granules and/or the amount of the binder resin (See column 3, lines 12-18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have controlled porosity of pelletized stone dust in Joedicke/Skadulis/McMahon in view of Ine et al by particle size distribution of the granular material, shape of the granules and/or the amount of the binder resin, as taught by Iwata et al.

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Response to Arguments

10. Applicant's arguments with respect to claims 4, 5, 7-14, and 39-50 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Thursday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy
Primary Examiner
Art Unit 1762

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PRIMARY EXAMINER
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November 30, 2006